

ACCESSION NR: AT4017182

S/0000/63/000/000/0364/0370

AUTHOR: Balandin, G. F. (Moscow); Yakovlev, Yu. P. (Moscow)

TITLE: The action of vibration on metals during crystallization

SOURCE: AN BSSR. Fiz.-tekhn. Institut. Teplofizika v litynom proizvodstve (Thermal physics in the foundry industry). Minsk, 1963, 364-370

TOPIC TAGS: metal crystallization, crystallization, vibration

ABSTRACT: Experience with vibration during casting shows that it is possible to eliminate or decrease defects in castings, specifically macro-chemical and structural heterogeneity, porosity, and cracks. Under the prolonged action of vibration on the melt (in a vibrating mold), rapid cooling of the overheated melt is observed. This may be explained by the intensive melting of the hard crust on the surface. It is noted that the action of vibration on the melt during crystallization can also be produced by other types of external influences (ultrasonic treatments of melts for casting and welding, periodic variation of speed for centrifugal casting, pouring of large castings through a cooled shaft, and induction mixing of the melt during continuous casting). Orig. art. has: 3 figures.

Card 1/2

ACCESSION NR: AT4017182

ASSOCIATION: Fiz.-tekhn. Institut, AN BSSR. (Institute of Physics and Technology,
AN BSSR)

SUBMITTED: 19Apr63

DATE ACQ: 06Mar64

ENCL: 00

SUB CODE: MM

NO REF SOV: 014

OTHER: 000

Card 2/2

ACCESSION NR: AT4016074

S/2698/63/000/000/0287/0291

AUTHOR: Balandin, G. F.; Yakovlev, Yu. P.

TITLE: Effect of vibrations on the properties of cast metal

SOURCE: Soveshchaniya po teorii liteynykh protsessov. 8th, 1962. Mekhanicheskiye svoystva litogo metalla (Mechanical properties of cast metal). Trudy^u soveshchaniya Moscow, Izd-vo AN SSSR, 1963, 287-291

TOPIC TAGS: casting, cast aluminum, cast steel, crystallization, grain size, vibration casting

ABSTRACT: Many laboratory and factory investigations have shown that the mechanical properties of castings are generally improved (hot crack formation and liquation are reduced, corrosion resistance and density are increased) when casting is performed with vibrations. In the casting laboratory of the MVTU, a procedure was developed for casting through a vibrating chute or funnel (shown in Fig. 1 of the Enclosure) at 1,000 oscillations per minute. Vibrations of both the mold and the funnel led to finer grain size because of the disintegration of the solid phase. Tests were performed with Al-Si and Al-Cu alloys of known strength near the solidus point. Alloys with higher strength near the solidus point showed less disruption under the influence of vibrations than alloys of

Card 1/3

ACCESSION NR: AT4016074

lower strength. Orig. art. has: 5 figures.

ASSOCIATION: MVTU im. Bauman

SUBMITTED: 00

DATE ACQ: 27Dec63

ENCL: 01

SUB CODE: MM

NO REF SOV: 000

OTHER: 000

Card 2/3

ACCESSION NR: AT4016074

ENCLOSURE: 01

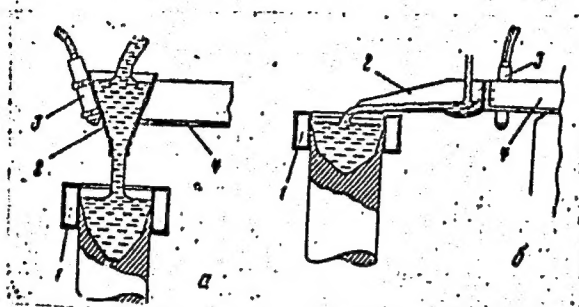


Figure 1.

Semi-continuous casting through a vibrating chute (a) and
vibrating funnel (b)

1 - crystallizer; 2 - vibrating pouring device; 3 - vibrator;
4 - fastening bracket

Card 3/3

ACCESSION NR: AT4016073

8/2698/63/000/000/0275/0280

AUTHOR: Balandin, G. F.; Bini, E. Ch.; Sokolov, Ye. A.; Stepanov, Yu. A.;
Yakovlev, Yu. P.

TITLE: Influence of technological factors on the mechanical properties of thin-walled castings

SOURCE: Soveshchaniye po teorii liteyny*kh protsessov. 8th, 1962. Mekhanicheskkiye svoystva litogo metalla (Mechanical properties of cast metal). Trudy* soveshchaniya. Moscow, Izd-vo AN SSSR, 1963, 275-280

TOPIC TAGS: casting, casting technology, squeeze casting, thin walled casting, aircraft, part, casting mechanical property, aluminum alloy, magnesium alloy, crack formation

ABSTRACT: Many aircraft parts, especially remote-controlled guidance structures, are made of large thin-walled pieces which are difficult to fabricate by rolling or pressing. These structures are now often cast, but this becomes difficult if areas of 1 x 2 m and thicknesses of only 2-2.5 mm are to be produced. The new technique of squeeze casting has proven satisfactory for thin castings and large sizes. The disadvantage of this method, however, is the formation of hot cracks while casting high-strength or high-temperature aluminum and magnesium alloys. In the casting laboratory of the MVTU im.

Card

1/4

ACCESSION NR: AT4016073

Baumana, parts with thicknesses below 2 mm were found to have low strength although most specimens conformed to the specifications of GOST 2685-55. In analyzing some of the reasons for the difficulties, particular attention is paid to casting temperature and the thickness of the cast (see the Enclosure). The temperature gradients arising in the alloy during and after squeeze casting are also considered and held to be responsible for variations in mechanical properties. The authors did not come to any final conclusions but suggest that further tests under actual working conditions should be performed in order to find out whether these castings can be used and are actually stronger than riveted or welded structures. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: MVTU im. Baumana

SUBMITTED: 00

DATE ACQ: 27Dec63

ENCL:02

SUB CODE: MM,AS

NO REF SOV: 003

OTHER: 002

Card

2/4

ACCESSION NR: AT4016073

(a)

ENCLOSURE: 01

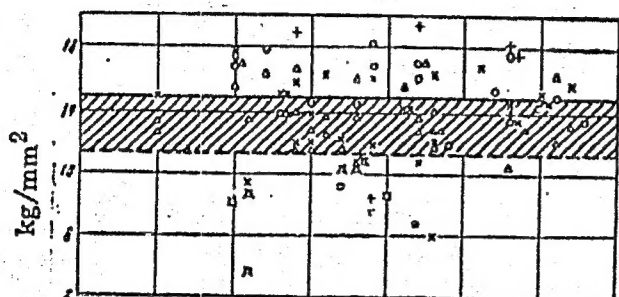


Fig. 1 -- Dependence of the ultimate strength of alloys on the pouring temperature and casting depth.

a - Al15V alloy; b - Al10 alloy; readings of samples with defects are shaded.

Card

3/4

BALANDIN, G.F., kand. tekhn. nauk, dotsent; GINI, E.Ch., kand. tekhn. nauk;
MATVEYKO, Yu.P., aspirant; SOKOLOV, Ye.A., inzh.; STEPANOV, Yu.A.,
kand. tekhn. nauk, dotsent; YAKOVLEV, Yu.P., aspirant

Role of technological factors in the formation of strength
of thin-walled castings. Izv. vys. ucheb. zav.; mashinostr.
no.2:160-173 '64. (MIRA 17:5)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche imeni
Baumana.

L 19739-65 EMT(m)/ENP(b)/ENP(t) JD/MLK

ACCESSION NR: AT4048346

S/0000/64/000/000/0223/0227

AUTHOR: Balandin, G. F.; Gini, E. Ch.; Matveyko, Yu. P.; Sokolov, Ye. A.;
Stepanov, Yu. A.; Yakovlev, Yu. P.

TITLE: Formation of gas defects in thin-walled large-size castings

SOURCE: AN SSSR. Komissiya po tekhnologii mashinostroyeniya. Gazy v litom
metalle (Gases in cast metals). Moscow, Izd-vo Nauka, 1964, 223-227

TOPIC TAGS: cast metal, cast aluminum, cast manganese, mold filling, degassing,
gas defect, casting porosity, gas blister, gas hollow

ABSTRACT: The authors consider defects of a gaseous origin in thin-walled large-size panel-type castings with a body thickness of 2.5 - 3 mm and a surface area of up to 2 square meters. Such defects are conditionally divided into three groups: gas-shrinkage porosity, gas blisters in the body of the casting, and gas hollows or depressions on the surface. The importance of the degassing of the alloys (normally aluminum and manganese) of which these castings are generally manufactured is discussed, and techniques which may be used for this purpose are described. The relationship of the process of filling and ventilating the sand mold to the formation of gas defects in thin-walled panel-type castings when the latter are poured into such molds, is analyzed. The failure of efforts to remove
Card 1/3

L 19739-65

ACCESSION NR: AT4048346

the gas and air from the cavity of the mold by improving the gas-permeability of the mold mixture is discussed on the basis of certain experiments which were carried out along these lines. The technique of cutting escape channels along the joining plane of both half-sections of the mold, in order to provide an escape passage for the gases and air, is considered by the authors to be a reasonably effective procedure. The use of various special coverings on the mold surface in order to secure improved filling qualities (hexachlorethane and acetylene black, in particular) is analyzed and experimental results are given. Certain other chemical solvents are also discussed in this connection. The authors consider the difficulties encountered in pouring thin-walled castings whose design incorporates bosses and fluted sections into sand-clay molds because of the increased danger of the formation of gas-originated defects. Controlled temperature conditions during the filling of the mold are recommended in this case. Problems arising from the improper position of the casting in the mold and improper design of the mold itself are discussed as they relate to the type of defect under consideration when squeeze-pouring panel-type castings. Attention is also called to the importance of the correct selection of the die for the metallic half-forms of the mold, when pouring thin-walled castings by the extrusion method, since in many cases this may be the direct cause of the formation of gas defects on the casting surface and a source of gas saturation of the metal. "Engineer L. P. Kashirtsev took part in the experimental work." Orig. art. has: 1 table and 3 figures.

Card 2/3

L 19739-65

ACCESSION NR: AT4048346

ASSOCIATION: none

SUBMITTED: 20 May 64

NO REF SOV: 006

ENCL: 00

SUB CODE: MM

OTHER: 000

Card 3/3

ELERT, G.K., gornyy inzh.; YAKOVLEV, Yu.P., gornyy inzh.; KHVOSHCHEVSKIY,
N.M., gornyy inzh.; KOVALEV, V.M., gornyy inzh.

New blasting method for caving the roof in longwalls and layers.
Ugol' 39 no.10:13-17 O '64. (MIRA 17:12)

1. VzryvPEU kombinata Kuzbassugol'.

L 58571-65 EPA/EWT(m)/EWP(w)/EWP(r)/EPT(n)-2/EWP(v)/EPR/T-2/EWP(k)/EPA(bb)-2
 Pf-4/Paa-4/Ps-4 EM/WW
 UR/0286/65/000/011/0117/0117
 621.438-546
 ACCESSION NR: AP5017869

AUTHOR: Belyayev, Yu. V.; Yakovlev, Yu. P.

TITLE: A low power turbine. Class 46, No. 171696

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 11, 1965, 117

TOPIC TAGS: turbine engine

ABSTRACT: This Author's Certificate introduces a low power turbine for driving auxiliary aircraft equipment. The device contains a wheel which consists of two discs with semivanes. One of the discs is rigidly fastened to a shaft while the other is mounted loosely on the hub of the rigidly fastened disc. The loose running disc is connected to the rigidly fastened disc by a relative angular displacement mechanism. The turbine is designed for improved operational reliability and small overall dimension. The relative angular displacement mechanism consists of radial grooves cut into the free running disc. Bevelled lugs on the rigidly fastened disc fit into these grooves with a certain clearance. Small balls are placed in the gap formed between the edge of the groove and the bevelled edge of the lugs. Under the

Card 1/3

L 58571-65

ACCESSION NR: AP5017869

action of centrifugal force, these balls create the moment for the necessary relative angular displacement of the discs.

ASSOCIATION: none

SUBMITTED: 18Jun64

ENCL: 01

SUB CODE: PR

NO REF SOV: 000

OTHER: 000

Card 2/3

L 58571-65

ACCESSION NR: AP5017869

ENCLOSURE: 01

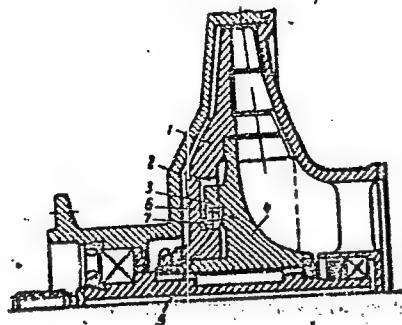


Fig. 1--free running disc; 2--radial grooves; 3--bevelled lugs; 4--rigidly fastened disc; 5--edge of the groove; 6--bevelled edge of the lug; 7--ball

dm
Card 3/3

L 18268-65 EWT(d) Po-4/Pq-4/Pg-4/Pk-4/Pl-4 IJP(c) BC

ACCESSION NR: AP4048837

S/0119/64/000/011/0006/0009

AUTHOR: Ginesin, V. G.; Serebryanskiy, A. Ya.; Yakovlev, Yu. S. B

TITLE: Dynamic characteristics of an RPl controller 9

SOURCE: Priborostroyeniye, no. 11, 1964, 6-9

TOPIC TAGS: controller / RPl controller

ABSTRACT: The principle of operation as well as the characteristics of a contactless electric general-purpose RPl industrial controller are described; a functional diagram and a simplified connection diagram are given. A theoretical evaluation is presented of the effect of the relay characteristics, direct-channel inertia, magnetic and final amplifier inertia upon dynamic characteristics of the controller. These conclusions are offered: (1) The direct-channel inertia and trigger parameters result in a $k = f(A_{1n})$ relation, where k is the controller gain and A_{1n} is the amplitude of the input signal, which affects the stability of an

Card 1/2

L 18268-65

ACCESSION NR: AP4048837

automatic-control system; (2) The magnetic and final amplifier, inertia, and also the brake hysteresis, increase the modulus and decrease the lead angle of the frequency characteristic, which again impairs the stability of the system. Orig. art. has: 5 figures and 9 formulas.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: IE

NO REF SOV: 000

OTHER: 000

Card 2/2

YAKOVLEV, Yu.S.

The EAUS-U universal standardized automatic regulation and
control system. Prib. 1 sred. kompl. avtomatiz. no.2:40-45 '63.
(MIRA 17:12)

YAKOVLEV, Yu. S. (Engr.-Capt.-Lieutenant)

Analytical Method of Determining the Transverse Launching of Naval Vessels
(Analiticheskiy Metoda Rascheta Poperechnovo Spuska Korabley). Engineer-Rear-Admiral
N. V. Alekseyev (ed.) under general supervision of the Chief of the Main Directorate
of Naval Vessel Construction, Engineer-Vice-Admiral N. V. Isachenkov. Military Press
of the Ministry of Armed Forces, Moscow, 1947. 174 pp. Illustr. Gives address of the
Central Scientific Research Institute of Naval Vessel Construction of the Soviet Navy
as 3 Philosophy Lane, Leningrad.

Book D 198267, 24 Jan 55

YAKOVLEV, YU. S.,
25476

K Ekologoanatomicheskoy Kharakteristike Vechno- i Letne-Zelenykh
Kustarnichkov. Botan. Zhurnal, 1948, No. 2. s. 195-201
Bibliogr: s 201

SO: LETOPIS NO. 30, 1948

PHASE I BOOK EXPLOITATION

SOV/6050

Yakovlev, Yuriy Sergeyevich

Gidrodinamika vzryva (Hydrodynamics of an Explosion) Leningrad, Sudpromgiz, 1961. 312 p. 2500 copies printed.

Reviewers: P. F. Fomin, Engineer Vice-Admiral; V. S. Chuvikovskiy, Candidate of Technical Sciences; Scientific Ed.: A. N. Patrashev, Doctor of Technical Sciences, Professor, Honored Scientist and Technologist of the RSFSR; Ed.: A. G. Fomichev; Tech. Ed.: Yu. N. Korovenko.

PURPOSE: This book is intended for specialists in the applications of the theory of explosion. It may also be useful to specialized students and aspirants and to shipbuilders.

COVERAGE: The general mechanism of shock-wave propagation is presented. The approximate relationships used to estimate hydrodynamic fields in

Card 1/1 2

Hydrodynamics of an Explosion

SOV/6050

explosions in unbounded fluid, the simple boundary-value problems in the theory of explosion, and the basic topics in the external-force problem are discussed, and seismic explosion waves (used in the study of the earth's crustal structure and in mineral prospecting) are considered. Examples accompany some chapters. The book was written to fill a gap in the Soviet literature. There are 54 references: 51 Soviet (including 3 translations) and 3 English.

TABLE OF CONTENTS:

Introduction	6
Ch. I. General Mechanism of Shock-Wave Propagation	9
1. Explosion presented from the hydrodynamic point of view	9
2. Brief information on thermodynamics	10
3. Strong discontinuities in gas dynamics	16
4. Conditions of dynamic compatibility. Dynamic adiabatic curve	23
5. Differential equations of gas dynamics. Bernoulli equation	33

Card 2/2

YAKOVLEV, Yu.V.

[Quantitative determination of impurities in highly pure metals
by means of radioactivation analysis] Kolichestvennoe opredelenie
primesei v metallakh vysokoi chistoty metodom radioaktivatsionnogo
analiza. Moskva, 1955. 16 p. (MIRA 14:7)

(Rare earth metals--Analysis) (Metals--Analysis)

(Radioactive isotopes--Industrial applications)

"APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001961920017-5

1. Detection of adverse effects

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001961920017-5"

Yakovlev, Yu. V.

USSR / Solid State Physics / Phase Transformations in Solid
Bodies

E-6

Abs Jour : Ref Zhur - Fizika, No. 5 1957 No. 11700

Author : Yakovlev, Yu. V.

Inst : -

Title : Quantitative Determination of Impurities in High-Purity
Metals by Radioactivation Analysis Method.

Orig Pub Issledovaniya v obl. geologii, khimii i metallurgii. M.,
Izd - vo AN SSSR, 1955, 90 - 104

Abstract : No abstract.

Card: 1/1

YAKOVLEV, Yu. V.

ZOLOTOV, Yu. A.; YAKOVLEV, Yu. V.

Problems of analytical chemistry at the All-Union Scientific and
Technical Conference on utilization of radioactive and stable
isotopes and irradiations in national economy and science. Zhur.
anal.khim. 12 no.4:570-571 J1-Ag '57. (MIRA 10:10)
(Moscow--Isotopes)

YAKOVLEV, Yu. V.

"Applications of Radioactivation Analysis in Metallurgy."

report to be submitted at the Colloquium on Radioactivation Analysis, Vienna, Austria, 1-3 June 1959.

Inst. affil: Inst. of Geochemistry and Analytical Chemistry im V. I. Vernadskiy, Moscow

YAKOVLEV, Yu. V.

P. 2, 5

PHASE I BOOK EXPLOITATION

SOV/3818

Postoyannyy mezhinstitutskiy kollokvium po tverdym fazam peremennogo sostava

Kachestvo materialov dlya poluprovodnikovoy tekhniki (Quality of Materials for Semiconductor Technology) Moscow, Metallurgizdat, 1959. 192 p. (Series: Its: Trudy, 1957-1958, vyp. 8-30) 3,600 copies printed.

Sponsoring Agencies: USSR. Sovet Ministrov. Gosudarstvennyy komitet po khimii; Akademiya nauk SSSR. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.

Ed. (Title Page): B.F. Ormont, Professor; Ed. (Inside Book): Yu.V. Yakovlev;
Ed. of Publishing House: L.M. El'kind; Tech. Ed.: P.G. Islent'yeva;
Editorial Board of Series: I.P. Alimarin, Corresponding Member, Academy of Sciences USSR, Geochemistry Institute, M.V. Grigor'yev, Scientific Research Institute, Committee on Radioelectronics, R.P. Lastovskiy, Professor, Institute of Chemical Reagents, Chemistry Committee, B.F. Ormont, Professor, Academy of Sciences USSR, Institute of Physics and Chemistry imeni L.Ya. Karpov, B.L. Porozhenko, State Rare Metals Scientific Research Institute, N.P. Sazhin, Corresponding Member, Academy of Sciences USSR, State Rare Metals Scientific

Card 1/8

Quality of Materials for Semiconductor Technology

SOV/3818

Research Institute, G.Ya. Tarasov, Scientific Research Institute, Committee on Radioelectronics, Yu.V. Yakovlev, (Resp. Secretary of the Board) Institute of Geochemistry, Academy of Sciences USSR.

PURPOSE: This book is intended for technical personnel engaged in the manufacture and utilization of semiconductors.

COVERAGE: This book treats methods of obtaining quality semiconductor materials and presents current standardized specifications for semiconductors and auxiliary materials. The book is divided into three parts. Part I consists of 16 reports delivered at two conferences in January 1957 and December 1958 at the Fiziko-khimicheskiy institut imeni L.Ya. Karpova (Institute of Physics and Chemistry imeni L.Ya. Karpov) by members of 36 participating institutes and industrial plants. The reports deal with the standardization of characteristics of pure semiconductor materials and describe spectral and spectrochemical analysis, and chemical, vacuum-fusion, polarographic, and radioactivation methods for studying semiconductor materials and determining impurities in them, along with the equipment used. Part II and III include specifications approved at the second conference. The following organizations participated in the work of preparing the specifications: Institute imeni L.Ya. Karpov, GEOKhI, IREA, NII of the Committee on Radio Electronics, Vsesoyuznyy alyuminevo-magniyevyy institut (All-Union Aluminum and Magnesium Institute), Vsesoyuznyy institut aviatsionnykh

Card 2/8

Quality of Materials for Semiconductor Technology

80V/3818

materialov (All-Union Institute of Aviation Materials), IMET AN SSSR, Gipronikel', Gintsvetmet, MGU, Technical Administration of the former Ministry of Nonferrous Metallurgy, Giredmet, Shchekovskiy Chemical Plant of MKhP, NIUIF, OKB, GIGKhS, FTI, NII MRTP, Stalin Plant of Chemical Agents, Sverdlovskiy Plant of Chemical Agents, "Krasnyy khimik" Plant, VAMI, Giprotsvetmetobrabotka, Kudinovskiy Plant of Elektrougol', Elektrougol'nyy nauchno-issledovatel'skiy institut (Electrode-Carbon Scientific Research Institute) of Gosplan USSR, and Nauchno-issledovatel'skiy institut kislorodnovo mashinostroyeniya (Scientific Research Institute of Oxygen Equipment). No personalities are mentioned. References accompany 15 of the reports in Part I.

TABLE OF CONTENTS:

Ormont, B.F., Professor [Chairman of the Permanent Interinstitute Colloquium on Solid Phases of Variable Composition]. Foreword

3

Card 3/8

Quality of Materials for Semiconductor Technology

SOV/3818

PART I. REPORTS ON METHODS FOR THE DETERMINATION OF
ULTRAMICROIMPURITIES IN SEMICONDUCTOR MATERIALS PRESENTED
AT THE CONFERENCES ON THE QUALITY OF SEMICONDUCTOR MATERIALS

Alimarin, I.P. [GEOKhI AN SSSR (Institute of Geochemistry and Analytical Chemistry imeni V.I. Vernadskiy, Academy of Sciences USSR)]. Problems of Analytical Chemistry of Semiconductors	11
Shafran, I.G. [UREA MChP SSSR (All-Union Scientific Research Institute of Chemical Reagents)]. Chemical Methods for the Determination of Microimpurities in a Number of Substances of High Purity	13
Turovtseva, Z.M. [GEOKhI AN SSSR]. Apparatus and Methods for the Determination of Gases in Metals by the Vacuum-Fusion Method	23
Kunin, L.L. [TsNIIChERMET (Central Scientific Research Institute of Ferrous Metals)]. Experiment on the Determination of Gases in Metals by the Vacuum-Fusion Method and the Possible Use of This Method for the Analysis of Semiconductor Materials	30

Card 4/8

Quality of Materials for Semiconductor Technology

SOV/3818

- Gokhshteyn, Ya.P., and A.M. Demkin [GEOKhI AN SSSR]. Polarographic Quantitative Determination of Copper, Bismuth, Lead and Titanium Impurities in Metalliferous Silicon 41
- Yakovlev, Yu.V., and I.P. Alimarin [GEOKhI AN SSSR]. Determination of Impurities in Semiconductors and Pure Metals by Radioactivation Analysis 54
- Kulak, A.I. [MKhTI imeni D.I. Mendeleeva (Moscow Chemical and Technological Institute imeni D.I. Mendeleev)]. Determination of Microimpurities of Certain Elements in Antimony and Gold by the Radioactivation Method 60
- Breger, A.Kh., B.P. Ormont, V.S. Kutsev, B.A. Chapyzhnikov, V.A. Khranchenkov, and B.I. Viting [IKhI imeni L.Ya. Karpova (Physics and Chemistry Institute imeni L.Ya. Karpov)]. The Radioactivation Method of Determining Oxygen in Semiconductors and Metals by Reaction $O^{16} (\gamma; n) O^{15}$ 68
- Shvangiradze, R.R., T.A. Mozgovaya, and N.V. Simonova. Spectral Determination of Impurities in Certain Pure Substances 72
- Card 5/8

Quality of Materials for Semiconductor Technology

SOV/3818

Borovskiy, I.B. [IMET AN SSSR (Institute of Metallurgy imeni A.A. Baykov AS USSR)]. New Method of Studying the Composition of Microvolumes of a Substance	81
Rzhanov, A.V. [FIAN (Physics Institute imeni P.N. Lebedev, Academy of Sciences USSR)]. Electrophysical Method of Determining Microimpurities in Semiconductors	95
Kupriyanov, S.Ye. [FKhI imeni L.Ya. Karpova]. Use of an MS-1 Mass Spectrometer in Analysis of Inert Gases and Determination of Small Quantities of Impurities in Them	104
Ormont, B.F. [FKhI imeni L.Ya. Karpova]. Concerning the Problem of Standardizing the Characteristics of High-Purity Semiconductor Materials	108
Solodovnik, S.M., L.S. Vasilevskaya, and A.I. Kondrashina [Giredmet (State Institute of Rare Metals)]. Spectrochemical Analysis of Elementary Silicon, Silicon Dioxide, Hydrofluoric Acid, Nitric Acid, and Hydrochloric Acid	116

Card 6/8

YAKOVLEV, Yu. V., ALIMARIN, I. P.

"Opportunities in the Use of Modern Methods for the Determination
of Ultra-Small Amounts of Impurities in Ultra-Pure Materials."

submitted at the Conference on Kinetic Methods of Analysis, Ivanovo,
14-16 June 1960

So: Izvestiya Vysshikh Uchebnykh Zavedeniy SSSR, Khimiya i Khimicheskaya
Technologiya, Vol III, No 6 Ivanovo, 1960, pages 1113-1116.

20622

S/063/60/005/005/011/021

A051/A029

55500

AUTHORS: Baranov, V.I., Professor, Sarkov, Yu.A., Chernov, G.M.,
Yakovlev, Yu.V.

TITLE: Radioactivation Analysis of Pure Materials and Prospects of Its
Development

PERIODICAL: Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva im. D.I.
Mendeleyeva, 1960, No. 5, Vol. 5, pp. 570-573

TEXT: The radioactivation analysis method is used for the determination of pure materials in the semiconductor and reactor-building industries. It is highly sensitive, depending on the magnitude of the flux of bombarding particles and the cross-section of the activation of a given element, i.e., its specificity; there is no necessity for a quantitative separation of the traces of the elements, no correction for the control test (Ref. 7-10). In the more recent application of the method gamma-spectroscopy is used (Ref. 13-15) which reduces the number of chemical separations of the analyzed

Card 1/10

20622

S/063/60/005/005/011/021
A051/A029

Radioactivation Analysis of Pure Materials and Prospects of Its Development

samples. By applying gamma spectroscopy, a continuous check of the accuracy and purity of the chemical operations can be carried out, contrary to the usual calculation of the β -activity. A study of the spectrum obtained leads to an estimation of the qualitative purity of the separated sample according to the energies of the characteristic gamma-rays. The amount of admixture present in the sample is determined from the areas of the spectra sections corresponding to the activated isotope of this admixture. The measurement of the area of the photopeak is done by approximation of the photopeak contour of the Gaussian error curve. If the sample under investigation does not emit gamma-rays, or if its half-life is so slight that it completely decays by the time the measurements are made, then the gamma-scintillation spectrometer introduces new possibilities for coping with this problem. Reference is made to a number of publications dedicated to the application of gamma-spectroscopy (Ref. 16-19). The authors of this article conducted a radioactivation analysis of admixtures in materials used in the semiconductor-manufacturing industry and list the obtained results. Ad-

Card 2/10

20622

3/063/60/005/005/011/021
A051/A029

Radioactivation Analysis of Pure Materials and Prospects of Its Development

mixture detection in silicon was carried out using a 50-channel scintillation spectrometer. A 40 x 40 mm NaJ(Tl) crystal served as the emission detector and the ФЭУ-(FEU-S) photomultiplier was used. The detector was surrounded by a lead shield. The impulses from the photomultiplier reached the 50-channel amplitude analyzer through the linear amplifier and discriminator. The analyzer is based on the principle of transformation of the pulses in time, combined with the memory device on an ordinary electrostatic cathode-ray tube. Recording of the signals on the analyzer tube renders it possible to obtain the spectrum image on a linear scale with an unlimited channel capacity. The resolution of the gamma-spectrometer measured by Cs¹³⁷ is 9%. The estimated Zn content was $1 \cdot 10^{-2}\%$, arsenic $1.2 \cdot 10^{-1}\%$, copper and gallium $2-3 \cdot 10^{-7}\%$. Fig. 1 shows the gamma-spectrum of the activated silicon sample. Further work was carried out on the same gamma-spectrometer without chemical processing of the sample being analyzed for determining admixtures of Mn, Zn, Cu, As and Sb in several samples of thallium metal. A weighed batch (about 0.5 g) of the sample and standards in the form of microquantities of

Card 3/10

20622

S/063/60/005/005/011/021
A051/A029

Radioactivation Analysis of Pure Materials and Prospects of Its Development

salts of the elements being determined were placed into quartzite containers previously processed with hot aqua regia and then rinsed with water, alcohol and ether. The containers were wrapped in aluminum foil, placed into aluminum cases and irradiated in a neutron flux of about 10^{15} neutr. per $\text{cm}^2 \cdot \text{sec}$ for 24-28 hours. After a chemical purification from impurities, primarily Na, the standards and samples were measured in the gamma-spectrometer. In analyzing thallium on the gamma-spectrometer a difficulty arises: although Tl^{204} formed in the reactor is a β -emitter with a transition to the main level, about 30% of its decay is due to K-captures. Thus a characteristic X-ray emission with an energy of about 75 Kev occurs, which renders the analysis difficult for small quantities of admixtures. Fig.2 shows the spectra of two investigated samples of thallium. The decay curve of the photopeak of As+Sb showed that it is mainly due to As^{76} ($T_{1/2} = 26$ hours). Table 1 shows the result of the determination of Mn, Cu, Zn, Sb and As admixtures in the thallium sample. The quantitative analysis of the admixtures was carried out by comparing the areas or the photopeak heights of the

Card 4/10

20622

S/063/60/005/005/011/021
A051/A029

Radioactivation Analysis of Pure Materials and Prospects of Its Development

sample being analyzed and the standards relative to one moment of time. Correction for the geometry was not introduced, since the samples and standards were measured under similar conditions. The admixture content (in %) was estimated after calculating the absolute mass of the admixture. Table 2 gives the results of the analysis of several samples of graphite, also carried out on the gamma-spectrometer without chemical separation. In discussing the future prospects of developing the radioactivation method of analysis the authors point out some of the difficulties in applying it. The main difficulty is given as being the fact that most substances when activated with neutrons become gamma-emitters themselves. Germanium is given as an example. Another difficulty lies in the processing of the gamma-spectrum obtained in the spectrometer due to the occurring Compton electrons which give a continuous distribution of the pulses on the spectrum. A third difficulty is the detection of admixtures with a small yield, giving photopeaks which are weak in their intensity. The authors further state that one of the main problems which lie ahead in this connection is the development of

Card 5/10

20622

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A051/A029

Radioactivation Analysis of Pure Materials and Prospects of Its Development

X

new effective methods of chemical purification of ultra-small quantities of admixtures from the basic component having gamma-activity. The chemical purification in this case must not take up too much time, since the decay of the short-living activity lowers the sensitivity of the activation analysis. By developing the described methods, gamma-spectroscopy will become applicable for analyzing materials, which, when activated, become intensive gamma-emitters themselves. It is further recommended to decrease the Compton background by using more perfected spectroscopic apparatus. The authors have developed a one-channel double-crystal counting gamma-spectrometer with automatic recording of the spectra (Ref. 23). It is based on the principle of the simultaneous recording of the gamma-spectrum by two different crystals with subsequent counting of the obtained spectra in a corresponding difference scheme. A third aspect is the application of the double-crystal spectrometer for significantly increasing the sensitivity of the method without lessening the effectiveness and resolving power. The authors point out the necessity of developing an activation method for the analysis of short-lived

Card 6/10

20622

S/063/60/005/005/C11/021
A051/A029

Radioactivation Analysis of Pure Materials and Prospects of Its Development

isotopes. When investigating the admixtures of short-lived radioactivity, the activation analysis should be carried out near the reactor for this reason. The radio-chemical operations should be eliminated. Finally, the authors suggest that in order to detect certain elements by the activation method, it would be most feasible to use fast neutron fluxes. In the case of detecting Al and Mg admixtures, for example, the reaction on fast neutrons should be used: $\text{Al}^{27}(\text{n}, \alpha)\text{Na}^{24}$ and $\text{Mg}^{24}(\text{n}, \text{p})\text{Na}^{24}$. The reaction on neutrons in the resonance energy field might also prove useful in this connection. A significant increase in the monochromatic neutron flux would then be necessary. The activation analysis method should be developed toward a constant minimum loss in its performance and toward increasing its productivity. Automation of measurements is suggested, as well as of the result processing, yielding a complete analytical chart of the sample. This can be facilitated by introducing into industry the activation method of analysis of elements by the computing technique. There are 3 figures, 2 tables and 23 references: 9 Soviet, 14 English. X

Card 7/10

20622

S/063/60/005/005/011/021
A051/A029

Radioactivation Analysis of Pure Materials and Prospects of Its Development

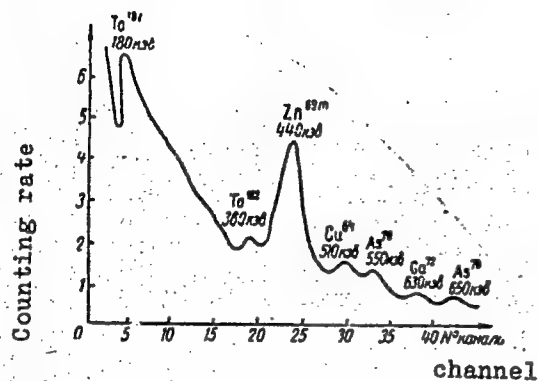


Figure 1: Gamma-spectrum of an activated sample of silicon.
Card 8/10

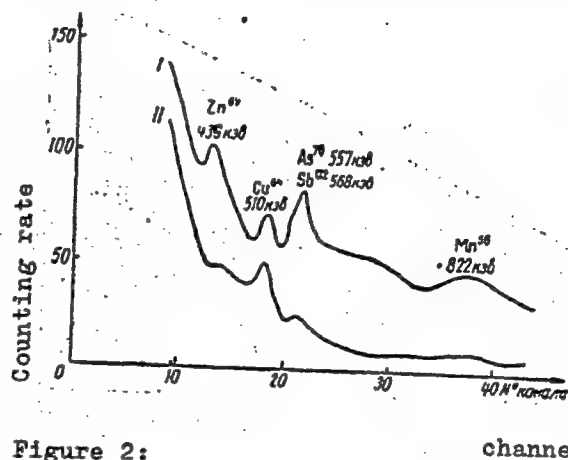


Figure 2: Gamma-spectrum of two activated samples of thallium

20622
S/063/60/005/005/011/021
A051/A029

Radioactivation Analysis of Pure Materials and Prospects of Its Development

Table 1: Results of analysis of highly-purified thallium

Sample No.	Admixtures being determined, in %				
	Mn	Cu	Zn	Sb	As
1	$2,9 \cdot 10^{-7}$	$3 \cdot 10^{-7}$	-	$\leq 4 \cdot 10^{-6}$	$2 \cdot 10^{-6}$
2	$1,3 \cdot 10^{-7}$	$1 \cdot 10^{-7}$	$4 \cdot 10^{-5}$	$\leq 9 \cdot 10^{-6}$	$5 \cdot 10^{-6}$
3	$< 4 \cdot 10^{-8}$	$1,8 \cdot 10^{-7}$	$1 \cdot 10^{-5}$	$\leq 2 \cdot 10^{-6}$	$1 \cdot 10^{-6}$
4	$< 4 \cdot 10^{-8}$	$\leq 1 \cdot 10^{-7}$	-	$\leq 2 \cdot 10^{-6}$	$1 \cdot 10^{-6}$

X

Card 9/10

20622

S/063/60/005/005/011/021
A051/A029

Radioactivation Analysis of Pure Materials and Prospects of Its Development

Table 2: Results of analysis of highly-purified graphite

Sample No.	Admixtures being determined, in %		
	Br	Au	W
1	$1,9 \cdot 10^{-4}$	none	none
2	$5 \cdot 10^{-4}$	$2,3 \cdot 10^{-8}$	none
3	$3,4 \cdot 10^{-4}$	$1,1 \cdot 10^{-7}$	$2 \cdot 10^{-5}$
4	none	none	$6, \cdot 10^{-4}$
5	$2,6 \cdot 10^{-4}$	none	$5 \cdot 10^{-5}$

Card 10/10

S/C32/CO/026/009/CO/C
BO15/UC51

AUTHORS: Alimarin, I. P., Yakovlev, Yu. V.

TITLE: The Present State of the Methods of Determining Impurities
in Semiconductor Materials

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 8, pp. 915-921

TEXT: The present paper explains in how far the analytical methods available meet requirements where their lower limit of sensitivity lies, and what can be done to increase the latter, the following methods are exp. d. n. ed: chemical, above all colorimetric analytical methods, methods of investigating reaction products with the help of instruments (spectrophotometry), electrochemical methods (polarography), ultramicrochemical methods, methods of physical analysis, and methods of concentrating microimpurities. It was found that none of the methods mentioned can be regarded as universal. For this reason it is necessary to employ several of the existing analytical methods to determine a larger number of impurities in high-purity substances. It is pointed out that at present the main task consists in a wider

Card 1/2

The Present State of the Methods of Determining S/032/60/026/008/001/011
Impurities in Semiconductor Materials B015/B064

application of instrumental methods, especially radioactivation^A and mass spectroscopic analysis, which complete each other, and can solve the problem of determining microimpurities up to 10^{-7} - $10^{-9}\%$. I. Noddak (lecturer held on the VIII Mendeleevskiy s'ezd - 8th Mendeleev Congress), V. A. Nakhvankin, I. M. Kerenman, I. S. Mustafin, V. I. Kuznetsov, K. B. Yatsimirskiy, Ya. A. Bozhavol'nyy, M. N. Petrikova, L. N. Firimov, L. V. Lipis, E. Ya. Vaynshteyn, and Yu. F. Bydin are mentioned in the paper. There are 48 references: 36 Soviet, 7 US, 2 German, 1 British, and 1 Polish.

Card 2/2

S/032/60/026/011/001/035
B015/B066

AUTHORS: Rakovskiy, E. Ye., Smakhtin, L. A., and Yakovlev, Yu. V.
TITLE: Determination of Microimpurities in High-purity Antimony 27
by Means of Radioactivation Analysis 19
PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 11, pp. 1199-1200 ✓

TEXT: The radioactivation analysis of antimony according to A. Kulak (Ref. 4) cannot be applied to determine impurities in light elements. The authors describe such a method for the determination of phosphorus, chromium, manganese, copper, zinc, gallium, and arsenic impurities in high-purity samples of antimony. The method consisted of a comparison with standard samples. The sample and the standard were exposed to a neutron flux ($8.7 \cdot 10^{12}$ n/cm²·sec) for 20-48 h. The elements to be determined were divided into two groups, i.e. Mn, Cr, Zn and Ga on the one hand, and P, Cu, and As on the other. To analyze the former group, the sample is dissolved in aqua regia after irradiation, evaporated, antimony is precipitated with H₂S, the solution is evaporated to dryness,

Card 1/3

Determination of Microimpurities in
High-purity Antimony by Means of
Radioactivation Analysis

S/032/60/026/011/001/035
B015/B066

taken up in hydrochloric acid, and the resulting solution is passed through a column with the Dowex 1-X8 anion exchanger which absorbs Ga and Zn. Ga is then eluted with 1-2 N HCl, Zn with water. Mn and Cr which are not absorbed by the exchanger are precipitated with H_2S in ammoniacal medium as sulfide and hydroxide, respectively, and finally isolated; Mn in the form of $MnNH_4PO_4$, and Cr as barium chromate. In the test for Cu, P, and As, after dissolution of the irradiated sample As is isolated as arsenic bromide, Cu is separated as $CuCNS$, and the phosphate is isolated as magnesium ammonium phosphate after purification on the KY-2 (KU-2) cation exchanger. The test samples as well as the standard samples were measured by means of a CM-2B (SI-2B) Geiger counter with an accuracy of about $\pm 5\%$. The following determination accuracies were found:

$3 \cdot 10^{-6}\%$ Mn, $3.5 \cdot 10^{-6}\%$ Cu, $\leq 8 \cdot 10^{-7}\%$ Zn, $4 \cdot 10^{-5}\%$ As, $\leq 8 \cdot 10^{-6}\%$ P, $\leq 5 \cdot 10^{-4}\%$ Cr and $\leq 3 \cdot 10^{-7}\%$ Ga. With the separation scheme described, radiochemically pure preparations can thus be obtained. There are 4 references: 3 Soviet and 1 British.

Card 2/3

Determination of Microimpurities in
High-purity Antimony by Means of
Radioactivation Analysis

S/032/60/026/011/001/035
B015/B066

ASSOCIATION: Institut geokhimii i analiticheskoy khimii Akademii nauk
SSSR im. V. I. Vernadskogo (Institute of Geochemistry and
Analytical Chemistry imeni V. I. Vernadskiy of the Academy
of Sciences USSR)

Card 3/3

[illegible]

S/081/61/000/023/015/061
B117/B147

AUTHORS: Alimarin, I. P., Yakovlev, Yu. V., Shulepnikov, M. N.,
Peregozhin, G. P.

TITLE: Determination of small amounts of impurities in thallium,
gallium, phosphorus, and antimony by the method of radio-
activation analysis

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 23, 1961, 128, abstract
23D97 (Sb. "Radioakt. izotopy i yadern. izlucheniya v nar.
kh-ve SSSR. v. I". M., Gostoptekhizdat, 1961, 293 - 297)

TEXT: A comparison was made between the radiochemical and spectroscopic
variants of the activation analysis. General schemes of the radiochemical
separation of impurities in the determination of Cu, Zn, As, Au, and P in
gallium and of Mn, Cu, Zn, Ga, As, P, and Cr in antimony, as well as the
main γ -spectra in the determination of Mn, Zn, Cu, Cs, and Sb in thallium
and of As, Mn, and Ga in phosphorus are presented. [Abstracter's note:
Complete translation.]

Card 1/1

S/081/62/000/022/012/088
B177/B186

AUTHORS:

Jakowlew, V. V., Alina, Z.

TITLE:

The determination of trace quantities of manganese and zinc in metallic bismuth by the method of radioactivation

PERIODICAL:

Referativnyy zhurnal: Khimiya, no. 22, 1962, 130, abstract 22D106 (Pierwsze krajowe sympoz. zastosowań izotopów techn., Rogów, June 8-12, 1960, Warszawa, no. 10, 1961, [Pol., summaries in Russ. and Eng.])

TEXT: To determine Mn and Zn in high-purity bismuth, a specimen (~ 1 g) in a quartz crucible is irradiated by a stream of slow neutrons ($8 \cdot 10^{12}$ neutrons/cm²sec) for 20-48 hrs. 10-20 mg each of Mn and Zn are added to the irradiated specimen as carriers (in the form of chloride solutions), and it is dissolved in aqua regia. The solution is concentrated with HCl. The residue is diluted with water to reduce the concentration of HCl to 0.6-0.8 N, and H₂S is bubbled through it to precipitate Bi, Cu, As and Sb as sulfides. After separation, the filtrate

Card 1/4

The determination of trace ...

S/081/62/000/022/012/088

B177/B186

(containing Mn and Zn) is boiled with HNO_3 , then neutralized by an NaOH solution to a weakly acid reaction, and NH_4OH and H_2O_2 are added to precipitate Mn as MnO_2 . After separation, the precipitate is dissolved in a mixture of HNO_3 with H_2O_2 while being heated, and as the H_2O_2 decomposes, MnO_2 is precipitated by adding solid KClO_3 (to separate Mn from the rare-earth elements). The precipitate is again dissolved, solutions of Bi, Cu, Zn and Ni salts are added as reverse carriers, and precipitation is repeated by adding MnO_2 . The MnO_2 is reprecipitated once again. The precipitate is dissolved. NH_4Cl and Na_2HPO_4 and NH_4OH solutions are added. The evolved MnNH_4PO_4 is separated, dried, and the intensity of β -radiation caused by the presence of Mn^{56} is measured by a Geiger counter. The precipitate is calcined, weighed and the weight used to calculate the percentage of Mn evolved from the specimen. The Mn content is found by comparing the registered activity with that of a precipitate evolved by the same method from a specimen of bismuth to which a known quantity of Mn was

Card 2/4

S/081/62/000/022/012/088
B177/B186

The determination of trace ...

added before irradiation. ZnS is precipitated in an acetate medium from a filtrate (obtained after the separation of MnO_2) containing Zn. The precipitate is dissolved in 10 ml of 1 n HNO_3 , heated to boiling point, a solution of $(\text{NH}_4)_2\text{Hg}(\text{SCN})_4$ is added, the precipitated $\text{ZnHg}(\text{SCN})_4$ is removed and dissolved in HNO_3 with application of heat. The solution is diluted to 10 ml and HgS precipitated by bubbling H_2S through it. The filtrate is diluted to 30 ml, a solution of Bi salt is added (as a carrier) and H_2S bubbled through. The precipitate is separated, the filtrate is heated to boiling point, a solution of FeCl_3 (carrier) is introduced, and $\text{Fe}(\text{OH})_3$ is precipitated by adding NH_4OH . HNO_3 is added to the filtrate (up to 1 mol/l) and Zn is precipitated as $\text{ZnHg}(\text{SCN})_4$. The precipitate is separated, flushed with water, alcohol and ether, and after drying, the activity caused by the presence of Zn^{69} is measured. The method was used to determine 10^{-4} to $10^{-6}\%$ of Zn and 10^{-7} to $10^{-8}\%$ of Mn in metallic

Card 3/4

The determination of trace ...

S/081/62/000/022/012/088
B177/B186

bismuth. The mean error in determining both elements is ~ 30%.

[Abstracter's note: Complete translation.]

Card 4/4

ALIMARIN, I.P.; YAKOVLEV, Yn.V.; SHCHULEPNIKOV, M.N.; VLASOV, D.A.;
CHERNOV, G.M.; SURKOV, Yn.A.

Radioactive determination of impurities in high purity
thallium. Zhur.anal.khim. 16 no.2:213-216 Mr-Apr '61. (MIRA 14:5)

1. Vernadsky Institute of Geochemistry and Analytical Chemistry,
Academy of Sciences U.S.S.R., Moscow.
(Thallium—Analysis)

UDAL'TSOVA, N.I.; SAVVIN, S.B.; NEMODRUK, A.A.; NOVIKOV, Yu.P.;
DOBROLYUBSKAYA, T.S.; SINIAKOVA, S.I.; BILIMOVICH, G.H.;
SEN'DYUKOVA, A.S.; BELYAYEV, Yu.I.; YAKOVLEV, Yu.V.;
NEMODRUK, A.A.; CIMUTOVA, M.K.; GUSEV, N.I.; PALEY, P.N.;
VINOGRADOV, A.P., akademik, glav. red.; ALIMARIN, I.P.,
red.; BABKO, A.K., red.; BUSEV, A.I., red.; VAYNSHTEYN, E.Ye.,
red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; RYABCHIKOV,
D.I., red. toma; TANANAYEV, I.V., red.; CHERNIKHOV, Yu.A., red.;
SENYAVIN, M.M., red. toma; VOLYNETS, M.P., red.; NOVICHKOVA, N.D.,
tekhn. red.; GUS'KOVA, O.M., tekhn. red.

[Analytical chemistry of uranium] Analiticheskaya khimiya urana.
Moskva, Izd-vo Akad.nauk SSSR, 1962. 430 p. (MIRA 15:7)

1. Akademiya nauk SSSR. Institut geokhimii i analiticheskoy
khimii.

(Uranium—Analysis)

P/046/62/007/003/002/008
D256/D308

AUTHORS: Yakovlev, Yu.V. and Streliński, S.

TITLE: Determination of contaminations in pure phosphorus
using neutron activation and gamma-ray spectroscopy

PERIODICAL: Nukleonika, v. 7, no. 3, 1962, 141-151

TEXT: The described method of impurity determination was developed in order to avoid troublesome chemical separation after the irradiation of the phosphorus; the latter becomes strongly active under thermal bombardment with a half-life period of 14.5 days. The impurities of arsenic, manganese and gallium in samples of spectrally pure and "extra pure" phosphorus were determined using a NaI(Tl)-crystal gamma-ray spectrometer with a 100-channel pulse-height analyzer. The contents of the arsenic impurity was determined from the obtained gamma-spectra by integration of the photo-peaks, and an extrapolation method is described used to estimate the impurities of manganese and gallium. There are 4 figures and 4 tables.

Card 1/2

P/046/62/007/003/002/008
D256/D308

Determination of ...

ASSOCIATION: Yakovlev: Institut geokhimii i analiticheskoy khimii AN, SSSR, Dubna (Institute of Geochemistry and Analytical Chemistry AS USSR, Dubna); Streliński: Instytut badań jądrowych, PAN, Warszawa, Dział chemii analitycznej (Institute of Nuclear Research, PAS, Warsaw, Department of Analytical Chemistry) ✓

SUBMITTED: February, 1962

Card 2/2

S/032/62/028/006/001/025
B110/B101

AUTHOR: Yakovlev, Yu. V.

TITLE: Fundamental problems of the analysis of high-purity substances

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 6, 1962, 643-644

TEXT: This is a review of admissible impurities in high-purity substances which can be subjected to: (1) radioactivation analysis (sensitivity, 10^{-8} - $10^{-11}\%$) which takes much time and is only slightly sensitive to Al, Mg, Ca, Fe, Si, etc. (2) Mass-spectrum analysis (sensitivity, 10^{-7} - $10^{-9}\%$). Double-focusing mass spectrometers are not available in the USSR. (3) Oscillographic and amalgam polarography with stationary Hg electrode (sensitivity, 10^{-6} - $10^{-7}\%$). (4) a-c polarography and polarography with catalytic currents. (5) Spectrochemical methods using physical and chemical enrichment of impurities and spectrum analysis (sensitivity, 10^{-5} - $10^{-7}\%$). Sensitivity can be improved by using a hollow cathode.

Card 1/2

Fundamental problems of the analysis ...

S/032/62/028/006/001/025
B110/B101

(6) Methods of luminescence for the determination of Al, Ca, Be, and Ga (sensitivity, 10^{-6} - $10^{-7}\%$). The enrichment of impurities, however, requires better extraction, distillation, and coprecipitation using ashless organic coprecipitants.

Card 2/2

YAKOVLEV, Yu. V.

"Use of radioactivation to determine impurities in substances of a high degree of purity."

report presented at the IAEA Symp on Radiochemical Methods of Analysis, Salzburg, Austria, 19-23 Oct 64.

YAKOVLEV, Yu. V.; DOGADKIN, N. N.

"Use of radioactivation to determine impurities in substances of a high degree of purity."

report presented at IAEA Symp on Radiochemical Methods of Analysis, Salzburg, Austria, 19-23 Oct 64.

YAKOVLEV, Yu.V.

Present-day state and prospects for the development of radioactivation
analysis. Zhur. VKHO 9 no. 2:162-166 '64. (MIRA 17:9)

YAKOVLEV, Yu.V.

"Radioactivation analysis" by H.J.Bowen, D.Gibbons. Reviewed by Yu.V.
Iakovlev. Zhur.anal.khim. 19 no.10:1281 '64.

(MIRA 17:12)

YAKOVLEV, Yu. V., inzh.

Shielding tank walls for explosive forming in water. Mashinostroenie
no. 4:54 JI-Ag '65. (MIRA 18:8)

1. AIRCRAFT: Khar'kov Aviation Institute (Khar'kov)

ACCESSION NR: AP5018521

UR 0304/65/000/004/0054/0054
621.983

AUTHOR: Yakovlev, Yu. V. (Engineer)

TITLE: Screening of the basin walls in explosive forming in water

SOURCE: Mashinostroyeniye, no. 4, 1965, 54

TOPIC TAGS: explosive forming, water explosive forming, shock wave, basin wall shielding, composite damper, air screen

ABSTRACT: The Khar'kov Aviation Institute has devised a method of protecting the cement walls of cylindrical water basins against the action of the shock wave during explosive forming. Damper 2 (see Fig. 1 of enclosure) with three holes, 1 mm in diameter, both sides with 1.1 mm-thick D16LM aluminum sheet enclosed in a water-tight plastic envelope, was mounted near basin wall 1 at a depth of 300 mm. Explosive charge 3 was placed 250 mm from the damper and compressed air under a pressure of 1 atm was fed through perforated tube 4. The experimental results showed that the ratio of damper sheet deflection (under the action of the shock wave) on the air screen-protected damper and on the damper without an air screen varied from 0.347 to 0.53. In other experiments, cylindrical screens, 500 mm in diameter, were

Card 1/3

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ACCESSION NR: AP5018521

made from 0.7 mm iron sheet, plastic, or plywood and placed asymmetrically relative to the charge. All these screens were broken during explosion. The test results showed that the shielding of the basin walls with air screen during explosion in water reduced to one half the static pressure on the damper sheets and decreased the energy-flow density by about 6 times, thus creating conditions for increasing the service life of the basins. Orig. art. has: 1 figure. [MS]

ASSOCIATION: none

SUBMITTED: 00

ENCL: 01

SUB CODE: IE

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4065

Card 2/3

ACCESSION NR: AP5018521

ENCLOSURE: 01

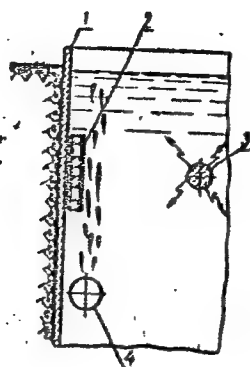


Fig. 1. Basin wall screened with
air for explosive forming in water

Card ^{KC}
3/3

ALIMARIN, I. P.; YAKOVLEV, Yu. V. Moscow

"Aktivierungsanalytische Spurenbestimmung in Reinstoffen."

report submitted for 2nd Intl Symp on Hyperpure Materials in Science and Technology, Dresden, GDR, 28 Sep-2 Oct 65.

Institut geokhimii i analiticheskoy khimii im Vernadskogo Akademii nauk SSSR, Moscow.

YAKOVLEV, Yu. V.

Cand. Technical Sci.

"Calculation of the Force in Heat Exchangers." Sub 28 Jun 51, Moscow Inst of
Chemical Machine Building

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

SOV/124-58-2-2086

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 2, p 84 (USSR)

AUTHOR: Yakovlev, Yu. V.

TITLE: Investigation of the Stiffness of a Plate With a Large Density of Perforations (Issledovaniye zhestkosti gusto perforirovannykh plit)

PERIODICAL: Tr. Khar'kovsk. aviats. in-ta, 1954, Nr 15, pp 149-152

ABSTRACT: Experimental determination of the stiffness of perforated plates with a triangular pattern of holes. An empirical formula

$$\psi = 1.18 (1-d/t)$$

is obtained for the coefficient of stiffness ψ , which is the ratio of the stiffness of the perforated plate as against the stiffness of the solid plate. Here d is the hole diameter, t is the distance between hole centers. This formula is suitable for values of $d/t \geq 0.3$.
Yu. N. Rabotnov

Card 1/1

KOSTYUK, D.I.; GOLDAYEVA, O.I.; YAKOVLEV, Yu.V.; TRET'YAKOVA, A.N., red.;
TROFIMENKO, A.S., tekhnred.

[Manual for project work for course credit on the theory of
mechanisms and machines] Rukovodstvo k kursovomu proektiro-
vaniyu po teorii mekhanizmov i mashin. Khar'kov, Izd-vo
Khar'kovskogo ordena Trudovogo krasnogo znameni gos.univ. im.
A.M.Gor'kogo, 1959. 252 p. (MIRA 12:12)
(Mechanical engineering--Handbooks, manuals, etc.)

KOSTYUK, D.I.; GOLDAYEVA, O.I.; YAKOVLEV, Yu.V. Prinimali
uchastiye: BOLOTOVSKI, T.P.; BOLOTOVSKIY, I.A.; SMIRNOV,
V.E.; BAZILYANSKAYA, I.L., red.

[Manual for the preparation of a course project in the
theory of mechanisms and machines] Rukovodstvo k kursovomu
proektirovaniu po teorii mekhanizmov i mashin. Izd.2.,
ispr. i dop. Khar'kov, Izd-vo Khar'kovskogo univ., 1961.
265 p. (MIRA 18:6)

YAKOVLEV, Yu.Ya. (Moskva)

In the world of chemical elements; "Frontiers and evolution of the
periodical system" by D.N.Trifonov. Reviewed by IU. IA. Iakovlev.
Priroda 53 no.6:123-124 '64. (MIRA 17:6)

YAKOVLEV, Yu.Ya. (Moskva)

More on the Tunguska meteorite. Priroda 53 no.9:113-114 '64.
(MIRA 17:10)

YANSHIN, A.L., akademik; YAKOVLEV, Yu.Ya. (Moskva); PLOTKIN, S.Ya., kand.tekhn. nauk (Moskva); GVOZDETSKIY, N.A., prof.; NOVIK, I.B. (Moskva); SVINTSITSKIY, V.H. (Moskva); KOZLOV, V.V. (Moskva); SULIDI-KONDRAT'YEV, Ye.D. (Moskva); BELOV, S.V. (Leningrad)

Books. Priroda 54 no.7:56-57; 71; 104-111 J1 '65.

(MIRA 18:7)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova (for Gvozdet'skiy).

SULIDI-KONDRAT'YEV, Ye.D. (Moskva); KOZLOV, V.V. (Moskva); BANNIKOV, A.G., prof. (Moskva); MENYAYLOV, A.A., doktor geol.-mineral.nauk; KUROCHKIN, G.D., kand.geol.-mineral.nauk (Moskva); SLUTSKIY, M.S. (Moskva); YAKOVLEV, Yu.Ya. (Moskva); LOPASHOV, G.V., dektor biolog.nauk (Moskva)

Books. Priroda 54 no.2:58,71,103,108,123-124 F '65.

(MIRA 18:10)

1. Institut morfologii zhivotnykh AN SSSR (for Lopashov).

YAKOVLEV-SIBIRYAK, I. I.

Agriculture

Actinidia. Moskva, Sel'khozgiz, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

YAKOVLEV-SIBIRYAK, I. I.

Sea buckthorn and oleaster. Izd. 3. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1954.
35 p.

YAKOVLEVA, A., assistant

Some critical remarks concerning M.F. Ul'ianicheva-Iudincheva's article "On the problem of sensitivity to penicillin and streptomycin of sick and healthy children as determined by means of epidermal droplet tests." Vop.okh.mat.i det. 5 no.3:90-91 My-Je '60. (MIRA 13:7)
(PENICILLIN) (STREPTOMYCIN) (UL'IANICHEVA-IUDINCHEVA, M.F.)

YAKOVLEVA, A.

State Bank's business and people. Den. i kred. 20 no.1:47-49 Ja
'62. (MIRA 15:1)

1. Nachal'nik proizvodstvenno-ekspluatatsionnogo otdela Kostromskoy
kontory Gosbanka.

(Ponazyrevo--Banks and banking)

82525

S/020/60/133/04/29/031

B004/B056

54600
AUTHORS:

Yakovleva, A. A., Borisova, T. I., Veselovskiy, V. I.

TITLE:

The Effect of Light Upon an Anode-polarized Germanium Electrode ¹

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 4, pp. 889 - 892

TEXT: It was the aim of the authors to investigate the effect of illumination upon the structure of the interface between germanium and electrolyte as well as upon the anodic dissolution of germanium. The method employed permitted illumination of the electrodes through the solution as well as of the dry side of the electrodes. (The electrode formed the bottom of a cylindrical Teflon vessel.) The experiments were carried out with monocrystalline n-type germanium of different resistivities in 0.1 N NaOH in a nitrogen atmosphere. The Ge electrodes were etched with CP-4 (SR-4). Illumination was carried out by means of an incandescent lamp within the range of 0.4 - 0.7 μ , partly with a constant current, and partly with constant voltage. It follows from Fig. 1 that

Card 1/3

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The Effect of Light Upon an Anode-polarized Germanium Electrode

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the system was sensitive to light within the entire region of polarization. The potential barrier is removed by illumination, and the potential drops within the saturation region to the constant value of 0.5 v. Above the breakdown potential this effect stops. In the initial part of the polarization curve, the rate of the anodic reaction is not limited by the concentration of minority carriers (Fig. 2). The last-mentioned author derived equation (1): $i = k \exp(-\Delta\psi_F/RT) \cdot \exp(-\alpha\Delta H_F/RT)$ for this region in an earlier paper (Ref. 7); here, $\Delta\psi$ denotes the potential change in the volume charge of the semiconductor, ΔH the potential change in the ionic double layer. For $\Delta\psi$, there further exists the dependence (2) on carrier concentration on the surface: $C_{\text{surf}} = C_{\text{volume}} \exp(-ne\Delta\psi/RT)$. All factors influencing the surface concentration of electrons and holes must therefore also influence $\Delta\psi$ and the total potential difference $\Delta\varphi$. Fig. 3 shows Δi_{light} and $\Delta\varphi_{\text{light}}$ as function of the intensity of illumination. Δi_{light} increases proportional to the absorbed light quanta. $\Delta\varphi_{\text{light}}$ rises exponentially in the initial part of polarization, and tends toward a limit with a saturation current.

Card 2/3

82525

The Effect of Light Upon an Anode-polarized Germanium Electrode

S/020/60/133/04/29/031
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Table 1 gives the quantum yield K for various intensities of the absorbed radiation in the case of a saturation potential. Table 2 shows the values of K for two intensities. K has a maximum in the saturation range. The results obtained by illuminating the dry side of the electrode are shown in Fig. 4, namely Δi_{light} as a function of $1/l$, the reciprocal value of the thickness of the electrode. Δi_{light} grows linearly with $1/l$. No differences between the two kinds of illumination could be found. Also in the illumination of the dry side of the electrode, a potential drop occurred with electrode thicknesses that were a multiple of the diffusion length of the minority carriers. There are 4 figures, 2 tables, and 7 references: 2 Soviet, 4 American, and 1 German.

ASSOCIATION: Fiziko-khimicheskii institut im. L. Ya. Karpova
(Physicochemical Institute im. L. Ya. Karpov)

PRESENTED: March 18, 1960 by A. N. Frumkin, Academician

SUBMITTED: March 18, 1960

Card 3/3

39239

S/076/62/036/007/002/G10
B101/B138

26.1620 (160 4919)
AUTHORS: Yakovleva, A. A., Borisova, T. I., and Veselovskiy, V. I.
(Moscow)

TITLE: Structure of the electrical double layer on oxidized silver
in alkali in the region of the transition from the lower to
the higher oxide

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 7, 1962, 1426 - 1431

TEXT: To find out the cause of the overvoltage which occurs in the trans-
ition region, the impedance of a silver electrode was measured in 1 N KOH
the charging curve plotted, and the photoelectrochemical behavior investi-
gated. Results: (1) High resistance and low capacitance were observed in
the transition region. (2) When the polarization current is cut off, the
potential shifts toward that of the system $Ag/Ag_2O/OH^-$. This potential
drop consists in a quick and a slow section to the curve. (3) On illumina-
tion, $\Delta\phi_{light}$ rises linearly with potential and falls rapidly when that of
the higher oxide is reached. When the illumination stops, the original
Card 1/2

Structure of the electrical ...

S/076/62/036/007/002/010
B101/B138

potential is restored; here again, a quick and a slow process can be distinguished. Conclusions: The electrochemical and photoelectrochemical behavior of the silver electrode in alkali are connected with the semiconductor properties of the system. Due to the discharge of OH ions, oxygen is adsorbed on the lower oxide in the transition region. A barrier layer is formed which is polarized in the direction of the cutoff and determines the potential difference and the kinetics of the anodic process. The major drop in overvoltage occurs in the surface layer and in the layer of adsorbed polarized particles. The ratio of these jumps depends on the potential and the steady-state conditions of the process. There are 7 figures. The most important English-language reference is: T. P. Durkse, J. Electrochem. Soc., 106, 5, 1959. ✓

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: August 18, 1960

Card 2/2

24.7700

S/020/62/145/002/016/018
B145/B101

AUTHORS: Yakovleva, A. A., Borisova, T. I., and Veselovskiy, V. I.

TITLE: Surface states of a germanium electrode during anodic dissolution

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 2, 1962, 373-376

TEXT: The surface states of germanium of almost intrinsic conductivity ($p = 42 \text{ ohm}\cdot\text{cm}$) and of n- and p-type germanium of different resistivities was studied in H_2SO_4 and NaOH solutions by measuring the resistivity and capacity at a polarization of approximately 0-6 v and a-c frequencies between 100 cps and 200 kcps in the dark and with irradiated surface. Conclusions: an increase in anodic polarization reduces the number of electrons in the electrode surface, with holes being accumulated. The free carriers of the conduction and valency bands take part to a different extent in the anodic dissolution. The reaction proceeds by forming dipole groups $(\text{Ge}(\text{OH})\text{O}^-)$ (hole acceptors) on the surface. The liberated electrons may be transferred to one of the two bands. The probability of transfer depends on the position of the complex with respect to the energy bands

Card 1/2

Surface states of a germanium...

S/020/62/145/002/016/018
B145/B101

and also on the surface concentration of the holes. This level is assumed to be a donor level which lies above the middle of the forbidden band. With weak polarizations, the reaction mainly proceeds through the conduction band. The downward shift of the Fermi level observed, and the accumulation of surface holes with increasing anode potential facilitates the electron transfer from the reacting complex and increases the portion of current conducted through the valency band. There are 3 figures. The English-language references are: W. H. Brattain, C. Garret, Bell Syst. Techn. J., 34, 129 (1955); C. G. Garrett, W. H. Brattain, Phys. Rev., 99, 376 (1955).

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physicochemical Institute imeni L. Ya. Karpov)

PRESENTED: April 4, 1962, by A. N. Frumkin, Academician

SUBMITTED: March 30, 1962

Card 2/2

24,7000

42188
S/076/62/036/011/018/021
B101/B180

AUTHORS: Yakovleva, A. A., Borisova, T. I., and Veselovskiy, V. I.

TITLE: State of surface and mechanism of self-dissolution of germanium in hydrogen peroxide solutions

PERIODICAL: Zhurnal fizicheskoy Khimii, v. 36, no. 11, 1962, 2541-2544

TEXT: The dependence of the potential, photoeffect, and capacitance on the H_2O_2 concentration in 0.1 N NaOH was studied on n-type and p-type germanium (5 ohm·cm) (Fig. 2). Corresponding to the maximum dissolution rate at 0.5 moles/liter of H_2O_2 , maximum capacitance also occurs at this concentration. ✓

The anodic polarization curves showed maximum saturation current at the lowest H_2O_2 concentration. These data suggest that the etching of germanium in alkaline hydrogen peroxide solutions proceeds via a stage of GeO formation, and is electrochemical in nature, since H_2O_2 is reduced on the cathode and Ge is dissolved on the anode. With a high H_2O_2 excess, however, GeO oxidizes to GeO_2 , and the dissolution process is inhibited.

Card 1/2

State of surface and mechanism:..

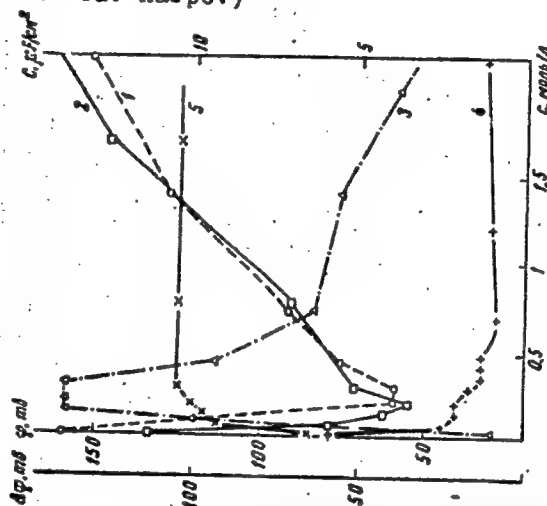
S/076/62/036/011/018/021
B101/B180

There are 3 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: April 6, 1962

Fig. 2. Variation in potential, photoeffect, and capacitance of Ge electrode at different H_2O_2 concentrations in 0.1 N NaOH; Potential of (1) n-type Ge; (2) p-type Ge; (3) capacitance (1 kc/sec); (4) photoeffect of n-type Ge; (5) photoeffect of p-type Ge; abscissa: H_2O_2 concentration, moles/liter.



Card 2/2

VESELOVSKIY, V.I.; BORISOVA, T.I.; YAKOVLEVA, A.A.; IZIDINOV, S.O.

"Some Specific Features of the Double Layer Structure and Electrode Process on Elemental and Oxide Semiconductors Ge, Si, Ag₂O, Ta₂O₅, TiO₂."

Report presented at the 11th meeting CITCE, Intl. Comm. of Electrochemical Thermodynamics and Kinetics, Moscow, 19-25 Aug 63.

Karpov Physico-Chemical Institute, Moscow, U.S.S.R.

ACC NR: AP6033662 SOURCE CODE: UR/0119/66/000/010/0008/0009

AUTHOR: Gilberman, A. Ya. (Engineer); Molodyk, A. M. (Engineer); Yakovleva, A. A. (Engineer)

ORG: none

TITLE: Silicon photodetectors for pulsed narrow-slot illumination

SOURCE: Priborostroyeniye, no. 10, 1966, 8-9

TOPIC TAGS: analog digital converter, silicon optic material, semiconductor device, silicon semiconductor, *PHOTOELECTRIC DETECTION*

ABSTRACT: A diffused silicon photodetector designed to operate with pulsed narrow-slot illumination is described. The detector (see Fig. 1) is built in a cassette

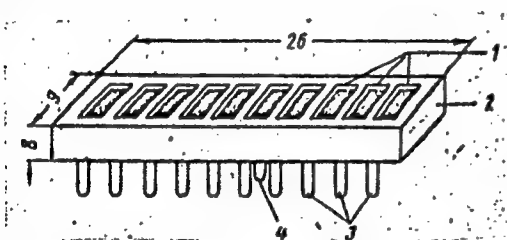


Fig. 1. Silicon cassette photodetector

1 - Photodetectors; 2 - cassette; 3 - output pins; 4 - common output.

Card 1/2

UDC: 621.383.2:546.28

ACC NR: AP6033662

configuration designed for use in analog-to-digital converters. The dimensions of the detector are $4.5 \times 1.5 \times 0.6$ mm. Depending on the application, the cassette may contain any number of detectors. The detector spectrum is similar to that of the xenon pulse lamp normally used in analog-to-digital converters. Some of the detectors parameters are: operating temperature, $\pm 60^\circ\text{C}$ with amplitude changes not greater than $\pm 20\%$ from the value measured at 20°C ; experimental values of capacitance and resistance of the p-n junction (at zero bias), $(1.5-3) \times 10^2 \mu\text{f}$ and $(1-3) \times 10^4 \text{ ohms}$, respectively; photoconductive time delay for a load of 5 kohm $(5-8) \times 10^{-6} \text{ sec}$; and threshold sensitivity, 10^{-8} lm . The large working surfaces and uniform sensitivity (within 3%) of the photodetector simplify adjustment and alignment of the optical system. The device can also be used in a number of other computer circuits. Orig. art. has: 4 figures.

SUB CODE: 09/ SUBM DATE: none/ ORIG REF: 006/ ATD PRESS: 5100

Card 2/2

YAKOVLEVA, A.A., kandidat meditsinskikh nauk

Clinical aspects of the early period of tuberculous meningitis in children. Sov.med. 20 no.11:60-64 N '56. (MLRA 10:1)

1. Iz kafedry detskikh bolezney (zav. - dotsent A.N.Karlova)
lechebnogo fakul'teta Ivanovskogo meditsinskogo instituta.
(TUBERCULOUS MENINGITIS, in inf. and child
diag. in early stage)

Characteristic of the initial stage of tuberculous meningitis are changes in the child's behaviour: inertia, sleepiness, lessened attention, together with rise of temperature, headache, vomiting, and constipation. Meningeal symptoms arise usually on the 6th or 7th day of illness. The author mentions two signs not described in the literature: the formation of a powdery deposit of urinary salts on the thighs, buttocks and genitals and a characteristic smell from the patients.

YAKOVLEVA, A.A.

Suppurative pericarditis in children. Vop.okh.mat. i det. 3 no.3:
87-89 J1-Ag '58 (MIRA 11:8)

1. Iz kafedry detskikh bolezney (zav. - dotsent A.N. Karlova)
lechebnogo fakul'teta i kafedry detskikh bolezney (zav. prof.
B.P. Apollonov) pediatricheskogo fakul'teta Ivanovskogo gosudarstven-
nogo meditsinskogo instituta.
(PERICARDITIS)

EXCERPTA MEDICA Sec 6 Vol 13/11 Internal Med. Nov 59

6332. INTRADERMAL TESTS FOR DETECTING INCREASED SENSITIVITY OF
MEDICAL PERSONNEL TO ANTIBIOTICS (Russian text) - Yakovleva
A. A. - SOV. MED. 1958, 22/10 (45-48)

Among the side effects of penicillin and streptomycin, the most frequent are those of the allergic type. This applies not only to the patients treated with these drugs, but also to nurses, pharmacists and workers in the drug industry. Hypersensitivity of the skin in the form of severe dermatitis covering large areas of the body was observed among nurses. In tests, crystalline penicillin and streptomycin were introduced intradermally. In 8 of 23 nurses a skin reaction revealed itself within 20 to 80 min.
Anigstein - Galveston, Tex. (L, 2, 6)

*Chair Childrens Diseases
Pediatrics Faculty, Ivanovo Med Inst*

YAKOVLEVA, A.A., kand.med.nauk

Side effects in the treatment of meningitis by subarachnoid
administration of streptomycin and penicillin. Sov.med. 24
no.1:103-109 Ja '60. (MIRA 13:5)

1. Iz kliniki fakul'tetskoy i gospi'tal'noy peidatrii (zav. - prof.
B.P. Apollonov) Ivanovskogo meditsinskogo instituta (dir. -
dotsent Ya.M. Romanov).

(MENINGITIS therapy)
(STREPTOMYCIN therapy)
(PENICILLIN therapy)